POWER CONVERTER HAVING
IMPROVED CONTROL

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ABSTRACT

[0053]   A power converter using a microcontroller is disclosed herein. In one embodiment, the power converter can be a digital flyback or forward converter. The microcontroller may have a digital pulse-width-modulation (PWM) controller, arithmetic logic unit (ALU) core, internal random access memory (RAM), read-only memory (ROM), and one or more analog-to-digital (A/D) and digital-to-analog (D/A) converters. For a fast dynamic response in an inner current control loop, an analog comparator is used to provide analog-based current control. The analog comparator may compare a signal representative of the current flowing in the power converter against a voltage reference, which can be programmable. The analog comparator may be integrated with the digital microcontroller into single integrated circuit (IC) chip. Furthermore, the power converter can send signals for the status of various conditions (e.g., output voltage levels, current levels, errors, etc.) or can receive signals for system control commands (e.g., output voltage, current protection levels, standby-mode for a lowest power consumption, normal mode, and power ON or OFF commands) via a serial communication port.